If the Restriction Requirement is not withdrawn, it is noted that Applicants have elected claims to a product. Should the Examiner determine that the elected claims are allowable, then it is respectfully requested that the Examiner permit rejoinder of the process claims that include all the limitations of the allowed product claims, pursuant to Notice of February 28, 1996, "Guidance on Treatment of Product and Process Claims in light of *In re Ochiai*, *In re Brouwer* and 35 U.S.C. §103(b)", 184 O.G. 86 (Comm'r Pat. 1996). See also the last paragraph of MPEP 706.02(n).

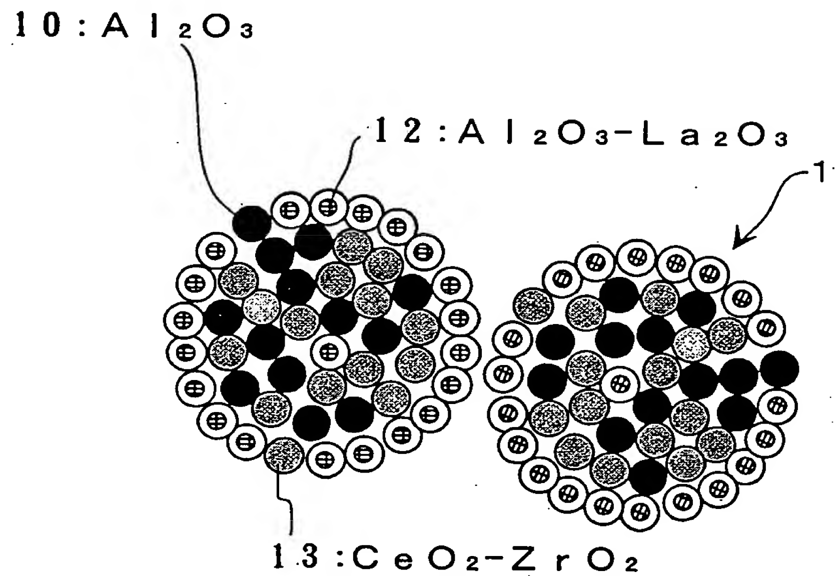
REMARKS

The present invention relates to a composite oxide, which is useful as a support for a catalyst for purifying an exhaust gas, a process for producing the same, a catalyst for purifying an exhaust gas, in which the composite oxide is employed as a support, and a process for producing the same.

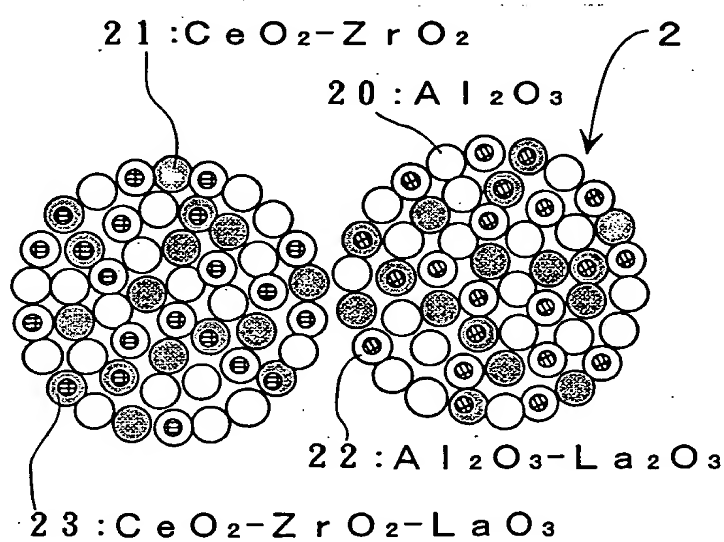
As recited in, for example, above-amended Claim 1, the present invention is a composite oxide, comprising: agglomerated particles, each agglomerated particle comprising a plurality of fine particles, the agglomerated particles having an average particle diameter of 20 μm or less and the fine particles having an average diameter of 50 nm or less, wherein the plurality of fine particles comprises oxides of a plurality of metallic elements, and each fine particle independently comprises an oxide of one or more of said metallic elements, **said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other**. (Emphasis added.)

The invention is exemplified by Fig. 1, which represents Example 1, described in the specification beginning at paragraph [0162], and which demonstrates the above-emphasized

feature. The terms "surface" and "inner portion" are defined in the specification at paragraph [0047]. Fig. 1 is reproduced below:



As Fig. 1 shows, and as described in the specification at paragraph [0166], particles 12 are distributed more at the surface, while particles 10 and 13 are distributed more in the inner portion. The present invention can be contrasted with Fig. 2, which represents Comparative Example 1, described in the specification beginning at paragraph [0199], and reproduced below:



As Fig. 2 shows, and as described in the specification at paragraph [0202], the agglomerated particles had a substantially uniform metallic element distribution from the surface side to the inner portion. As described in the specification, and as shown by the wealth of comparative data therein, the structure of the claimed composite oxides herein results in better catalyst performance.

Other embodiments of the present invention are claimed in independent Claims 13, 15 and 33, as well as the dependent claims herein.

The claimed subject matter is neither disclosed nor suggested by the applied prior art.

The rejection of Claim 1 under 35 U.S.C. § 102(b) as anticipated by EP 794,527 (Mizutani et al), is respectfully traversed. The Examiner relies on the disclosure at page 3, line 42 through page 4, line 14 therein which is a disclosure of alumina fine particulate agglomerates or fine particulate agglomerates of a composite oxide consisting of alumina and other metal oxide(s), wherein the agglomerates have an average particle diameter of 0.005 to 0.5 μm, and the primary particles have an average particle diameter of not more than 40 nm. However, there is no disclosure in '527 Mizutani et al with regard to the distribution of the metallic elements within the fine particulate agglomerates, even when the other metal oxide is present. Indeed, since Mizutani et al contemplate the use of alumina alone, '527 Mizutani et al would appear to disclose particles having a relatively homogeneous distribution. Accordingly, it is respectfully requested that this rejection be withdrawn.

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The rejection of Claims 1-38 under 35 U.S.C. § 102(b) as anticipated by EP 1,020,216 ('216 EP Suzuki et al), is respectfully traversed. EP Suzuki et al discloses a catalytic support including a mixture containing a porous oxide and a composite oxide, which mixture includes a particle having a particle diameter of 5 μm or more in an amount of 30% by volume or more (paragraph [0020]), wherein in the composite oxide particle, the average diameter of

crystallite is not more than 10 nm (paragraph [0032]). There is no disclosure or suggestion in EP Suzuki et al that their composite oxide particle has the structure of the composite oxide claimed herein, i.e., agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-38 under 35 U.S.C. § 102(e) as anticipated by either U.S. 6,150,288 (Suzuki et al '288) or U.S. 6,335,305 (Suzuki et al '305), is respectfully traversed. Suzuki et al '305 is the U.S. equivalent of, and is thus identical to, EP Suzuki et al, whose disclosure and deficiencies have been discussed above. Suzuki et al '288 discloses a composite oxide carrier in which component elements disperse with high homogeneity and more particularly a composite oxide catalyst crystallites of oxides of cerium and/or zirconium and secondary particles thereof, in which the sizes are decreased to a predetermined value or less, to enhance the heat resistance thereof as a composite oxide (column 1, lines 56-63). However, there is no disclosure or suggestion in Suzuki et al '288 that their composite oxide carrier has the same structure as the presently-claimed composite oxide, i.e., agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 1-38 under 35 U.S.C. §103(a) as obvious over EP 0 778,071 (Suda et al) or EP Suzuki et al, ',216' each in view of U.S. 4,910,180 (Berndt et al)[1], is respectfully traversed. The disclosure and deficiencies of EP Suzuki et al have been discussed above. Suda et al discloses a particle containing a solid solution of oxides in which one oxide is

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[1]Applicants' counsel acknowledges the Examiner's disclosure of the patent number for Berndt et al on January 29, 2003. Berndt et al has not been made of record. The Examiner is respectfully submitted to list it on a Form PTO-892 and send a copy thereof to Applicants with the next Office communication.

dissolved into the other oxide, and in which the degree of dissolution of one oxide into the other oxide is not less than 50%, and in which an average diameter of crystallite is not more than 100 nm (Abstract). The particle may contain ceria and zirconia (page 3, lines 46-49). However, Suda et al neither disclose nor suggest a composite oxide having the presently-claimed structure, i.e., agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other. Berndt et al does not remedy the above-discussed deficiencies in EP Suzuki et al and in Suda et al. The Examiner relies on Berndt et al simply for a disclosure of particle size. However, even if the particles of EP Suzuki et al and Suda et al had the presently-recited particle size, the result would still not be the presently-claimed invention. Accordingly, it is respectfully requested that this rejection be withdrawn.

The rejection of Claims 2-5, 8-10 and 13 under 35 U.S.C. § 112, second paragraph, is respectfully traversed. Indeed, the rejection is now moot in view of the above-discussed amendment. Note, however, with regard to the term "excepting Y_2O_3" in Claim 10, no antecedent basis is necessary. Accordingly, it is respectfully requested that this rejection be withdrawn.

All of the presently pending and active claims in this application are now believed to

be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to pass this application to issue.

Respectfully submitted,

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Amendment Filed Herewith

IN THE SPECIFICATION

Please amend paragraph [0166] (at pages 62-63) as follows:

[0166] The resulting composite oxide powder was observed with an FE-TEM, and was analyzed by an EPMA. As a result, it was found to comprise agglomerated particles 1, which had an average particle diameter of about 10 μm. The schematic structure of the composite oxide are illustrated in Fig. 1. The composite oxide powder was constituted mainly by three primary particles 10, [11] 13 and 12, which had an average diameter of 10 nm or less. The primary particles 10 were composed of Al_2O_3. The primary particles [11] 13 were composed of CeO_2-ZrO_2. The primary particles 12 were composed of an Al_2O_3-La_2O_3 composite oxide. As illustrated in Fig. 1, the primary particles [11] 13 were distributed more in the inner portion of the agglomerated particles 1. The primary particles 12 were distributed more in the surface side of the agglomerated particles 1. The Al_2O_3 primary particles 10 were also distributed in the inner portion.

IN THE CLAIMS

--1. (Amended) A composite oxide, comprising: agglomerated particles, each agglomerated particle comprising a plurality of fine particles, the agglomerated particles having an average particle diameter of 20 μm or less and [being composed of a plurality of metallic element oxides which are in form of] the fine particles having an average diameter of

50 nm or less, wherein the plurality of fine particles comprises oxides of a plurality of metallic elements, and each fine particle independently comprises an oxide of one or more of said metallic elements, said agglomerated particles having a surface and an inner portion whose metallic~~-~~element distributions differ with each other.

3. (Amended) The composite oxide according to claim 2, wherein Ce is present as CeO_2 and Zr is present as ZrO_2, and at least a part of CeO_2 and ZrO_2 form a solid solution.

5. (Amended) The composite oxide according to claim 4, wherein Zr is present as ZrO_2 and Ti is present as TiO_2, and at least a part of ZrO_2 and TiO_2 form a solid solution.

9. (Amended) The composite oxide according to claim 8, wherein Y is present as Y_2O_3, Ce is present as CeO_2, and Zr is present as ZrO_2, and a solving ratio of Y_2O_3 in CeO_2 is 10 mol% or less, and a solving ratio of Y_2O_3 in ZrO_2 is 90 mol% or more.

10. (Amended) The composite oxide according to claim 8, wherein Al is present as Al_2O_3, and said agglomerated particles further comprise a rare-earth element oxide, excepting Y_2O_3, and the rare-earth element oxide is solved in Al_2O_3 in an amount of 70 mol% or more.

13. (Amended) A composite oxide, comprising:

agglomerated particles having an average particle diameter of 20 μm or less, in which first oxide-phase fine particles having an average diameter of 50 nm or less, and second oxide-phase fine particles being different from the first oxide-phase fine particles and having an average particle diameter of 50 nm or less, are agglomerated,

said first oxide-phase forming a crystal having an aspect ratio of 30 or less and being highly dispersed with each other and with said second-phase fine particles to constitute said agglomerated particles, said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other.

15. (Amended) A composite oxide, comprising:

agglomerated particles having an average particle diameter of 20 μm or less, in which first oxide-phase fine particles having an average diameter of 100 nm or less, and second oxide-phase fine particles being different from the first oxide-phase fine particles and having an average particle diameter of 30 nm or less, are agglomerated,

said first oxide-phase fine particles having pores between the fine particles, in the pores which a major part of said second oxide-phase fine particles are dispersed, the pores having a median pore diameter of from 5 to 20 nm, 50% or more of all the pores falling in a range of ± 2 nm of the median diameter, said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other.

22. (Amended) A catalyst for purifying an exhaust gas, comprising: a catalytic ingredient being loaded on the composite [oxides] oxide set forth in [claims] claim 1.

23. (Amended) A catalyst for purifying an exhaust gas, comprising: a catalytic ingredient being loaded on the composite [oxides] oxide set forth in [claims] claim 13.

24. (Amended) A catalyst for purifying an exhaust gas, comprising: a catalytic ingredient being loaded on the composite [oxides] oxide set forth in [claims] claim 15.

25. (Amended) A catalyst for purifying an exhaust gas, comprising: a catalytic ingredient being loaded on the composite [oxides] oxide set forth in [claims] claim 16.

26. (Amended) A catalyst for purifying an exhaust gas, comprising:

a support substrate;

a first catalytic layer being formed on a surface of the support substrate, and [being composed of] comprising a first support including the first oxide phase set forth in claim 13, and a catalytic ingredient being loaded on the first support; and

a second catalytic layer being formed on a surface of the first catalytic layer, and [being composed of] comprising a second support including the second oxide phase set forth in claim 13, and a catalytic ingredient being loaded on the second support;

at least one of the first support and the second support including agglomerated particles, each agglomerated particle comprising a plurality of fine particles dispersed therein, the agglomerated particles having an average particle diameter of 20 μm or less, [in which a plurality of metallic element oxides being in form of] and the fine particles [and] having an average particle diameter of 50 nm or less [are dispersed], wherein the plurality of fine particles comprises oxides of a plurality of metallic elements, and each fine particle independently comprises an oxide of one or more of said metallic elements, said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other.

27. (Amended) A catalyst for purifying an exhaust gas, comprising:

a support substrate;

a first catalytic layer being formed on a surface of the support substrate, and [being composed of] comprising a first support including the first oxide phase set forth in claim 15, and a catalytic ingredient being loaded on the first support; and

a second catalytic layer being formed on a surface of the first catalytic layer, and [being composed of] comprising a second support including the second oxide phase set forth in claim 15, and a catalytic ingredient being loaded on the second support;

at least one of the first support and the second support including agglomerated particles, each agglomerated particle comprising a plurality of fine particles dispersed therein, the agglomerated particles having an average particle diameter of 20 μm or less, [in which a plurality of metallic element oxides being in form of] and the fine particles [and] having an

average particle diameter of 50 nm or less, [are dispersed], wherein the plurality of fine particles comprises oxides of a plurality of metallic elements, and each fine particle independently comprises an oxide of one or more of said metallic elements, said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other.

33. (Amended) A catalyst for purifying an exhaust gas, comprising:

a support substrate;

a support layer being formed on a surface of said support substrate, and including agglomerated particles, each agglomerated particle comprising a plurality of fine particles dispersed therein, the agglomerated particles [havign] having an average particle diameter of 20 μm or less, and [in which a plurality of metallic element oxides being in form of] the fine particles [and] having an average particle diameter of 50 nm or less [are dispersed], and zeolite particles, wherein the plurality of fine particles comprises oxides of a plurality of metallic elements, and each fine particle independently comprises an oxide of one or more of said metallic elements, said agglomerated particles having a surface and an inner portion whose metallic element distributions differ with each other; and

a catalytic ingredient loaded on said support layer.

34. (Amended) The catalyst for purifying an exhaust gas according to claim 33, wherein said support layer being formed as a two-layered construction includes at least a lower layer, and an upper layer being formed on a surface of the lower layer, the lower layer [being composed of] comprising the zeolite particles, and the upper layer [and being composed of] comprising the agglomerated particles.

35. (Amended) The catalyst for purifying an exhaust gas according to claim 33, wherein the agglomerated particles comprise a first metallic oxide[, being composed] of at

least one element selected from the group consisting of Al, Si and Ti, and a second metallic oxide [being composed] of at least one element selected from the group consisting of Ce and Pr.

36. (Amended) The catalyst for purifying an exhaust gas according to claim 35, wherein said agglomerated particles further comprise a third metallic oxide [being composed] of at least one element selected from the group consisting of La, Nd, Mg and Ca.

48-57. (New).--